

REMARKS

Claims 6 and 21 have been amended to recite that the upper and lower magnetic field generating mechanisms are moved vertically in synchronism with each other. Support for amended Claims 6 and 21 can be found at, for example, Fig. 12. Entry of this Amendment is respectfully requested. Claims 2-21 are pending, of which Claims 2-5 and 7-20 have been withdrawn from consideration.

Response to Claim Rejections Under §103

Claims 6 and 21 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over JP 2001-338912 to Ito et al or JP 2001-077095 to Morimoto in view of JP 06-181187 to Nishijima et al.; and

Claim 20 has been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Ito or Morimoto in view of U.S. Patent No. 6,014,943 to Arami et al.

Applicants respectfully traverse.

The present claims are directed to a magnetic field generator for magnetron plasma, comprising a plurality of magnetic segments provided on the outer side of a process chamber for performing a predetermined process on a substrate placed in the chamber for generating a multipole magnetic field along the circumference of the substrate, characterized in that the magnetic field generator comprises an upper magnetic field generating mechanism and a lower magnetic field generating mechanism, the upper and lower magnetic field generating mechanisms are moved vertically in synchronism with each other in opposite directions toward a horizontal level at which the substrate is positioned to decrease the distance therebetween and are moved vertically in synchronism with each other in opposite directions away from the horizontal level to

increase the distance therebetween, thereby to control the strength of the multi-pole magnetic field in the process chamber.

The Examiner asserts that Nishijima discloses a plasma processing apparatus using a moving mechanism 22, 32 which vertically moves the upper and lower magnetic field generating mechanisms 21, 31 in opposite directions toward and away from a horizontal level at which the substrate is positioned. See, page 4, paragraph 3 of the Office Action dated May 27, 2010. Moreover, the Examiner has previously asserted that “[h]owever, it should be noted that Nishijima discloses that the magnets 21, 31 are independently vertically adjusted by mechanisms 22, 32.” (emphasis added). See page 5, second full paragraph of the Office Action dated March 17, 2009.

Nishijima discloses that the upper permanent magnet 21 is structured to be adjusted relative to the upper electrode 16, and the lower permanent magnet 31 is arranged to be adjusted relative to the lower electrode 17. See, paragraph [0063]. In this regard, Nishijima does not control the distance between the magnets 21 and 31, and as such, fails to disclose or suggest a means for controlling the distance between the upper and lower permanent magnets 21 and 31.

In addition, as clearly illustrated in Figs. 1 and 3-6 of Nishijima, a wafer (i.e., a substrate) denoted by reference numeral 1 is positioned in the vicinity of the lower magnet 31. Thus, Nishijima fails to disclose or suggest that the upper and lower magnets 21, 31 are moved in opposite directions toward and away from a horizontal level at which the substrate is positioned. Accordingly, Nishijima fails to disclose or suggest the presently claimed movement of the upper and lower magnetic field generating mechanisms.

Ito, Morimoto and Arami fail to make up for the deficiencies of Nishijima discussed above.

Thus, Ito, Morimoto, Nishijima and Arami fail to render obvious the present claims.

Accordingly, withdrawal of the rejections is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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